

# National Infrared Operations

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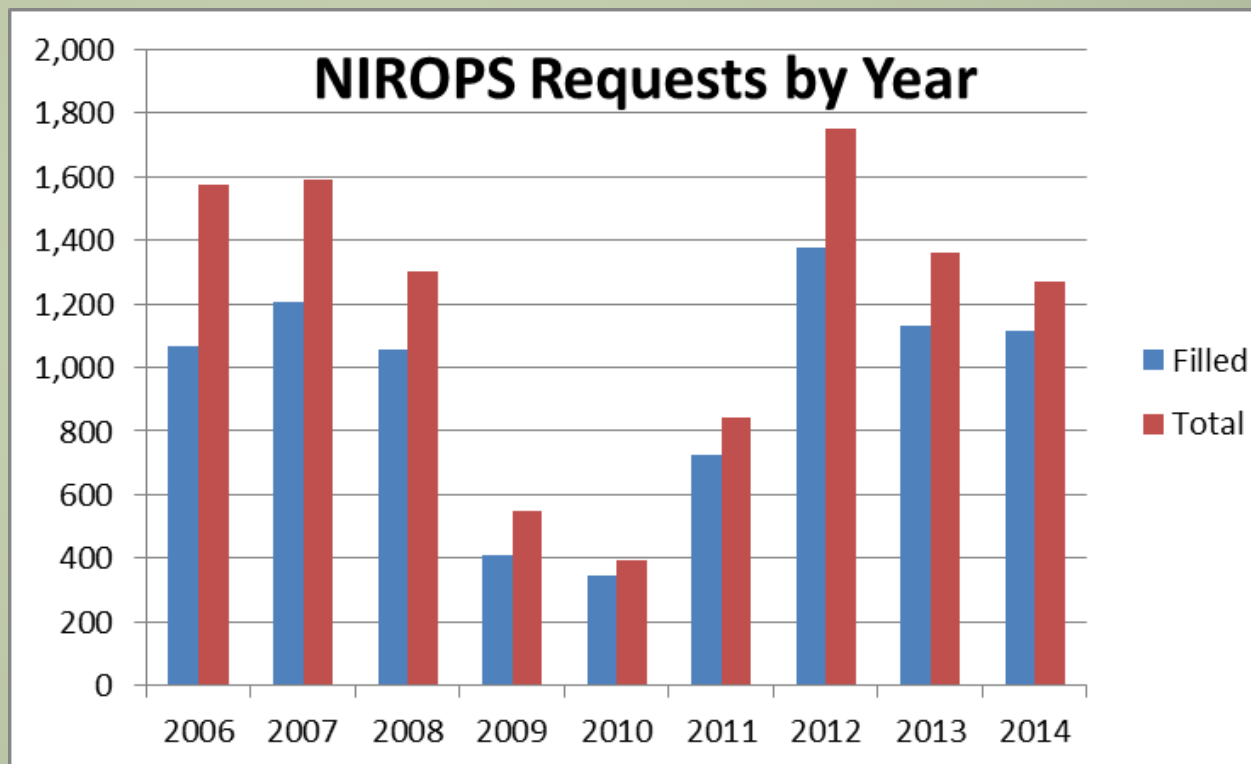
March 25, 2015

Intermediate GISS



## 2014 NIROPS Requests

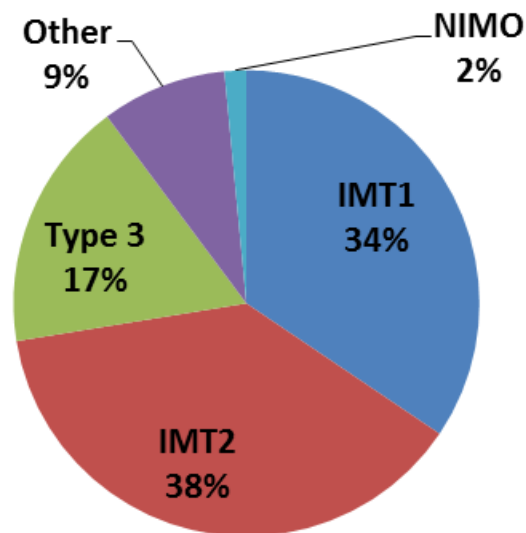
- 1,267 total requests with 1,116 filled
- 2014 acres burned was 36% of 2012
- 2014 missions flown was 81% of 2012
- 11% UTF rate



## Who is Requesting?

- 2014 was the second year we captured this information on the flight requests
- Very good response
- Need to make sure info is updated for transitions

**NIROPS Flight Requests**



## Busiest Night – August 7<sup>th</sup>, 27 Fires

### ● N144Z (10 fires)

- Camp Creek Complex (OR)
- Beaver Complex (OR)
- Coffee Complex (CA)
- French (CA)
- July Complex (CA)
- Lodge Complex (CA)
- KNF Beaver (CA)
- Day (CA)
- Little Dear (CA)
- Bald (CA)

### ● N149Z (17 fires)

- Carlton Complex (WA)
- Little Bridge Creek (WA)
- Lone Mountain (WA)
- Duncan (WA)
- Shoofly (WA)
- Chiwaukum Creek (WA)
- Hansel (WA)
- Devils Elbow Complex (WA)
- Snag Canyon (WA)
- Bald Sisters (OR)
- Somers (OR)
- Rowena (OR)
- 5 Mile (OR)
- South Fork Complex (OR)
- Logging Unit (OR)
- Big Cougar (ID)
- High Range (ID)



## Example – August 22, 2013 144Z

- Depart 1900 MDT from Boise
  - Beaver Creek, Little Queens, House Creek, Vinegar, Government Flats
- Depart 2100 MDT from Redmond
  - Whiskey, Douglas, Big Windy, Labrador, Butler, Salmon River, Corral
- Depart 0100 MDT from Redding
  - Hough, American, Chestnut, Rim, Shirley/Tenant
- RON Lancaster 0330 MDT

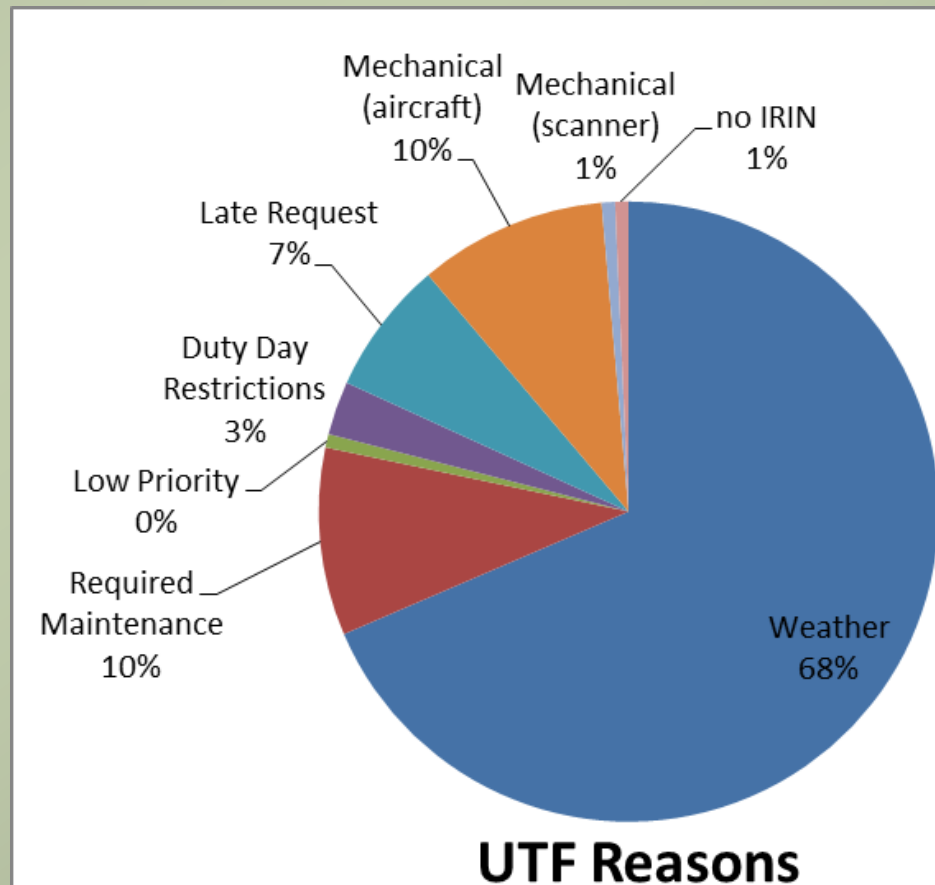


## Timely Delivery of Products

- Many IMTs looking for IR products at 0400/0430 for incorporation into AM briefing maps
- Flight schedule (and thus delivery schedule) can change nightly
  - Last flown fire may be first the next night
- *Planned* Flight schedule usually set by 2100 MDT
- IRIN may not get imagery until 0330 or later
- Set up a communication protocol with IRIN (text/call when posted)
- During high activity IRIN likely covering more than one fire

## UTFs (Unable to Fill) in 2014

- 143 total UTFs (NIROPS only)
- UTF rate drops from 11% to 3% when weather UTFs are not counted







# Notification of UTFs

- Automatic email will be sent to IRIN and SITL when flight is UTF'd (along w/ UTF reason)
- Could be @ 1700/1800 MDT when mission plan is developed or later for WX or mechanical
- Only works if valid email is entered in scan order for SITL
- Email may show up in Junk folder
- Set up communication protocol for later UTFs





## Communication

- Primary communication is between IRIN and SITL
- Make your information needs known to SITL or agree on communication protocol
- Updated perimeters for use in nightly interpretation are very valuable
- During high activity IRIN likely covering more than one fire
- Regular posting of perimeters to <ftp.nifc.gov>
  - Limits misuse of IR perimeters



## Carlton Complex - WA

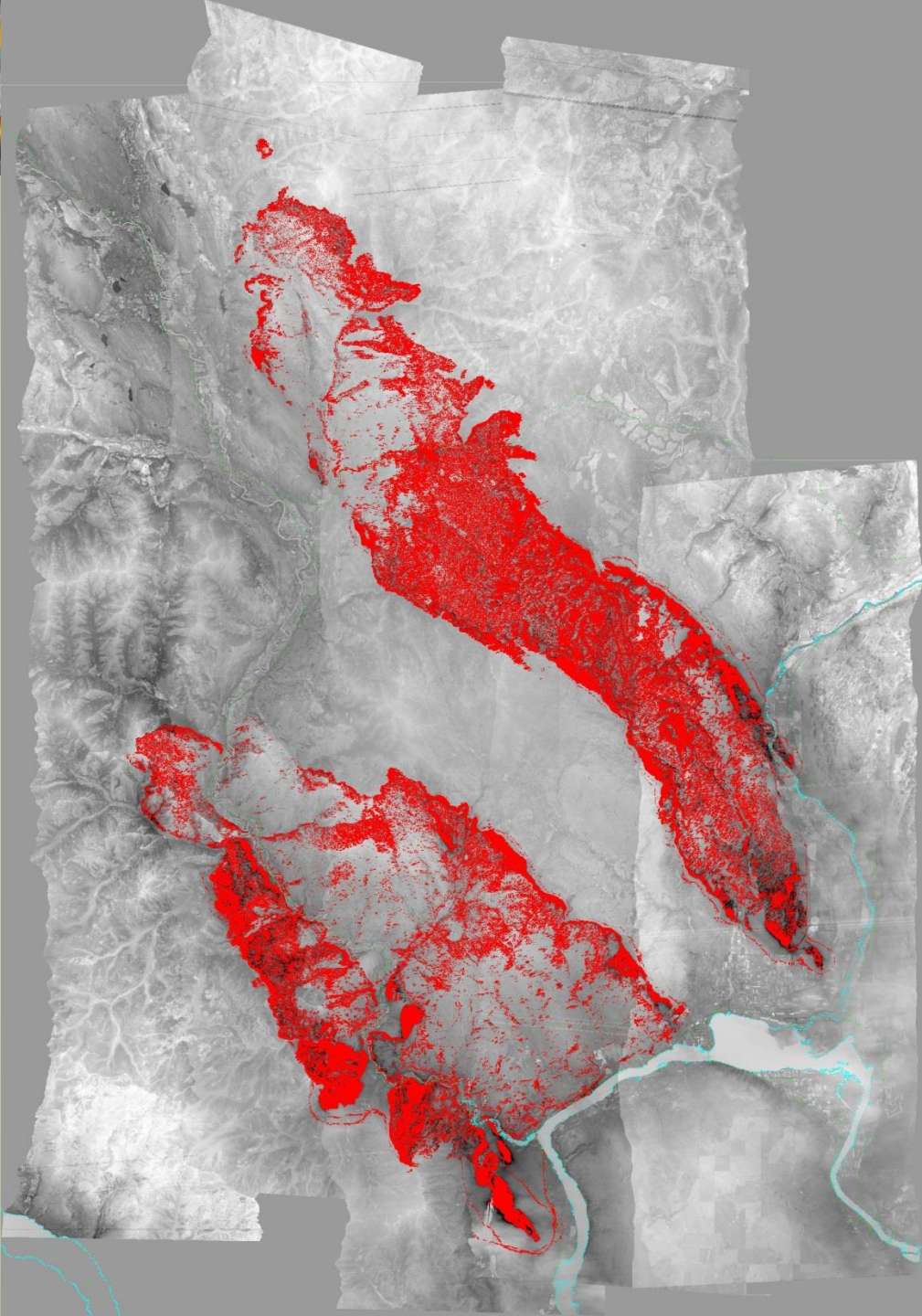
Started July 14 by lightning

Grew by 127,000 acres on July 17

Ran thru town of Pateros, 300 homes lost

Final acreage of 256,108 – largest fire in Washington State history

\$69M to fight







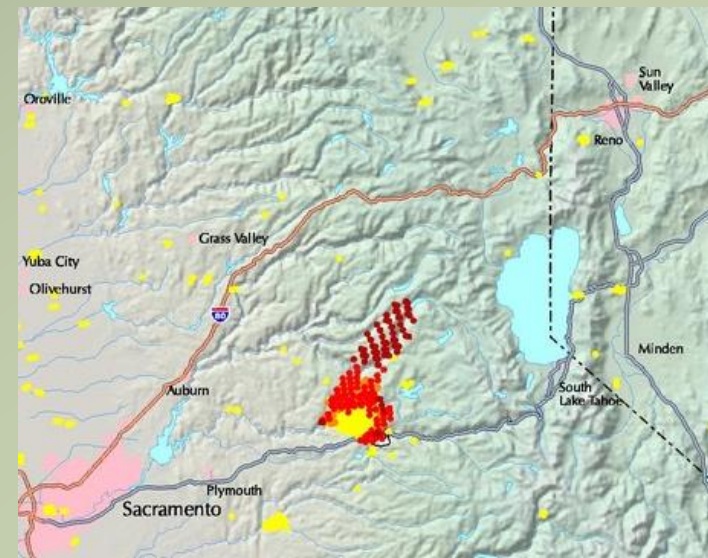
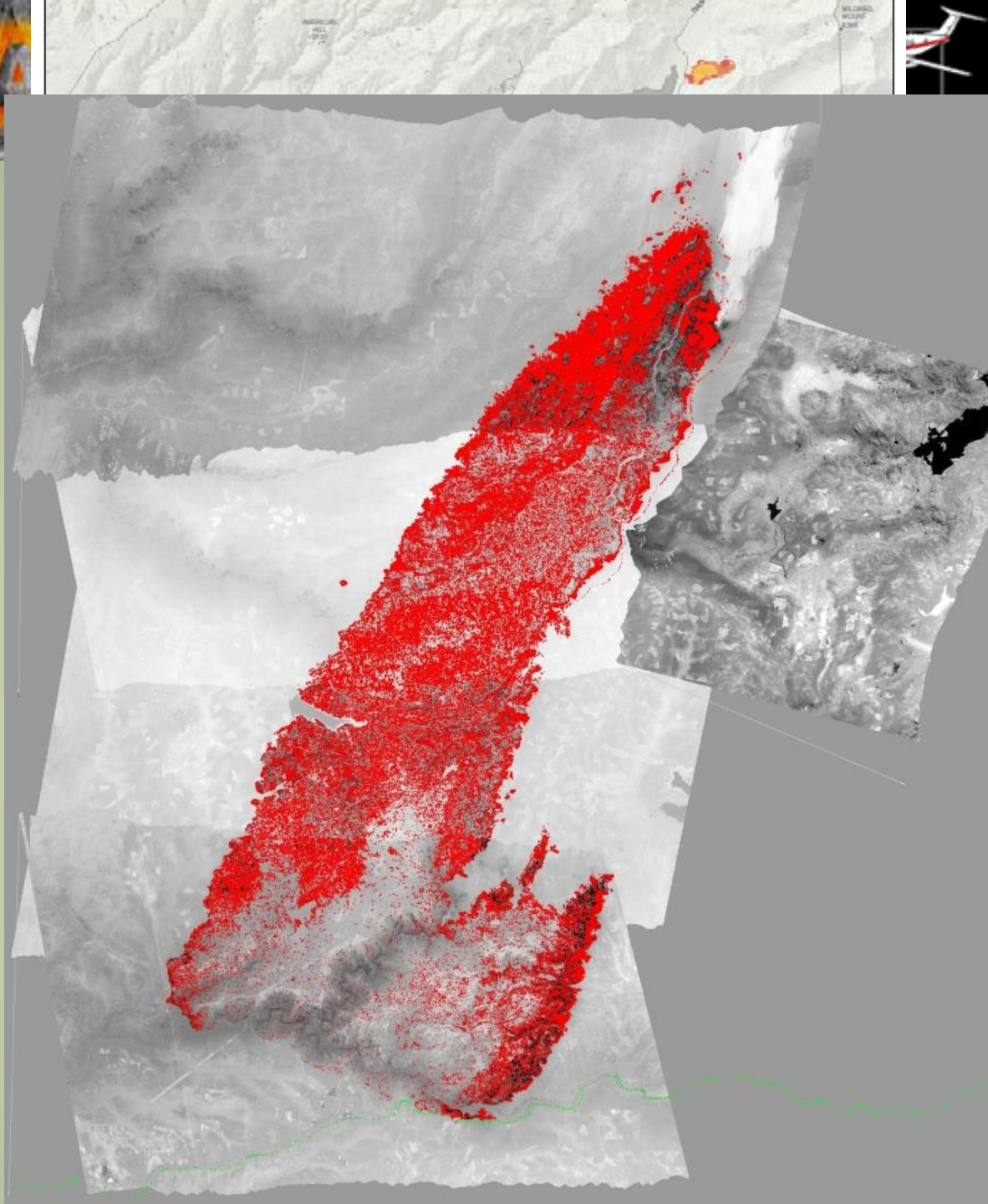
## King Fire, Eldorado NF - CA

Started on Sept 13 by arson

On Sept 17 grew by 50,000+ acres  
making a 13 mile run to the  
northeast and nearly tripling in size,  
final size of 97,717 acres

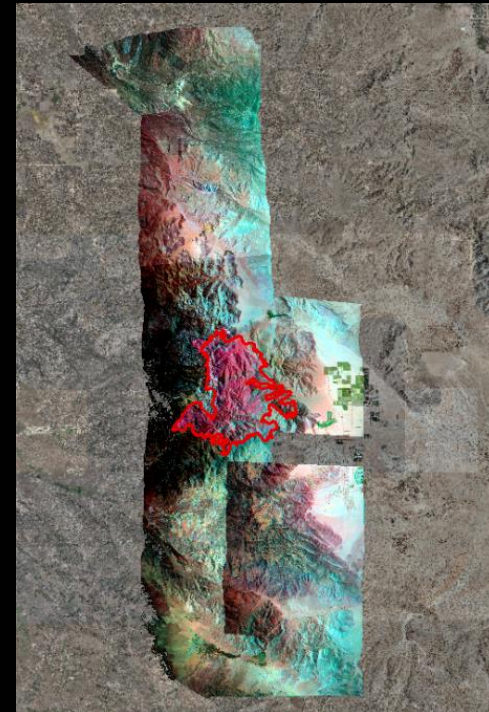
80 structures damaged (incl. 12  
residences)

\$102.5M to fight



# Autonomous Modular Sensor (AMS)

- Sensor system developed by NASA
  - Flown on NASA Ikhana (Predator B) UAS in 2007, 2008, 2009
- 16 channel line scanner system (Visible, NIR, SWIR, Thermal IR)
- Multi-mission capability
  - Active fire, burn severity assessment, forest health
  - Both day and night capability for active fire mapping
- Transferred from NASA to USFS in March 2013
  - NASA working with USFS on software upgrades and system training
  - Testing/integration flights will be conducted this spring





# Autonomous Modular Sensor (AMS)

- Conducted test flights from March through late May
  - Flew 10 target areas, including 2 wildfire incidents (multiple days)
    - Brown Fire, AZ – April 15/16, 2014
    - Signal Fire, NM – May 12-14, 2014
  - Same suite of NIROPS products delivered
- AMS currently installed on 144Z
  - Lining up potential RX fire missions for April-June



# Sensor Summary

Sensor System	Spatial Resolution	Spectral Resolution	Swath Width	Production Rate	Data Delivery	Platform
AMS^^	17.5 meters at 23,000 ft. ASL	16 channels: Visible, NIR, SWIR, MIR, Thermal IR	8.1 miles at 23,000 ft. ASL	TBD	Near real time using Aircell system	TBD**
WAI^^	3.5 meters at 40,000 ft. ASL	2 thermal IR channels; 3 Visible, Near IR	15 miles at 40,000 ft. ASL	2.9 million acres per hour	Near real time using Aircell system	Citation Bravo
Phoenix	3.5 meters at nadir at 10,000 ft. AGL	2 thermal IR channels	6 miles at 10,000 ft. AGL	300,000 acres per hour	Near real time using Aircell system	King Air B200, Citation Bravo

\*\* RSAC is working with FAM to access a suitable platform for the AMS

^^ The AMS and WAI are multi-mission capable sensor systems